Socioeconomic Characteristics and Host Community Participation in The Management of Tourism Facilities in Yankari Game Reserve, Bauchi State, Nigeria

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Abstract
This study examined the relationship between the socioeconomic characteristics of host communities and their participation in the management of tourism facilities in Yankari Game Reserve, Bauchi State, Nigeria. A quantitative approach and non-experimental survey design were adopted. The primary sources of data consist of field surveys and field observations, while the secondary sources of data consist of journal articles, textbooks, conference papers and other literary materials. The study covered seven host communities within a 1 km buffer of the reserve, such as Yalo, Pali, Jada, Mai'ari, Digare, Mansur, and Guruza. A sample of 374 household heads was proportionately allocated across the communities using simple random sampling. Of the questionnaires administered, 366 valid responses were analysed using descriptive statistics and the Chi-square test of independence. The findings revealed that community participation was generally moderate, with 44.8% of respondents reporting moderate involvement, while only 6.6% indicated full involvement. Recreational facilities constituted the most common area of community participation (35.5%). Regarding decision-making, 35.5% reported being consulted without having the final say, while 23.0% had no decision-making power. Inadequate funding (30.1%), insufficient community participation (29.8%), and limited technical expertise (18.3%) were the major constraints. Chi-square analysis established statistically significant associations between participation and nine socioeconomic characteristics: education, ethnicity, age, occupation, marital status, income, duration of residence, sex, and religion ($p < 0.05$). Household size showed no significant association ($p = 0.918$). The study concludes that socioeconomic characteristics are significantly associated with host community participation in tourism facility management. It recommends establishing inclusive community-based management committees, providing regular capacity-building programmes, improving funding mechanisms, and expanding equitable access to tourism-related economic opportunities to strengthen community participation and promote sustainable tourism facility management.

Keywords: *Socioeconomic characteristics, host communities, community participation, tourism facilities, Yankari Game Reserve.*

1. Introduction

Tourism plays an important role in economic development, cultural preservation, employment generation, and environmental conservation (Rahman et al., 2022; Sharma & Bhat, 2023; Yakubu et al., 2024). Protected areas and wildlife reserves attract visitors through their natural landscapes, biodiversity, and recreational opportunities (Chikezie et al., 2023; Yakubu et al., 2024). However, the sustainability of tourism in these areas depends not only on the availability of natural attractions but also on the effective management of tourism facilities and the participation of host communities (Bello, 2021; Eyisi et al., 2021; Rahman et al., 2022). Facilities such as access roads, accommodation, water supply, electricity, security services, and recreational infrastructure support visitors' experiences and contribute to the overall performance of tourism destinations. Their effective management requires adequate funding, institutional coordination, maintenance, and the involvement of relevant stakeholders, particularly communities living around protected areas (Chikezie et al., 2023; Onihunwa et al., 2023).

Host communities are important stakeholders in tourism development because their livelihoods, social relations, and access to local resources may be influenced by tourism activities (Eyisi et al., 2021; Yakubu et al., 2024). Their participation in tourism facility management can take different forms, including consultation, decision-making, maintenance, monitoring, and collaboration with government agencies and private operators (Arnstein, 1969; Bello, 2021; Chikezie et al., 2023). Meaningful participation may promote local ownership, improve accountability, strengthen cooperation, and ensure that tourism facilities respond to community needs (Eyisi et al., 2021; Rahman et al., 2022; Sharma & Bhat, 2023). Conversely, limited community involvement in management decisions may weaken local support for tourism initiatives and constrain the equitable distribution of tourism benefits (Arnstein, 1969; Reindrawati, 2023). Therefore, understanding the factors associated with host community participation is essential for promoting inclusive and sustainable tourism development (Bello, 2021; Han et al., 2023; Reindrawati, 2023).

Socioeconomic characteristics, including age, gender, educational attainment, occupation, income, household size, and length of residence, may influence the extent to which individuals participate in tourism facility management. For instance, education may improve awareness of tourism opportunities and management processes, while income and occupation may determine the time and resources individuals can devote to participation. Length of residence may also shape residents' knowledge of local conditions and their relationships with tourism authorities. Nevertheless, these characteristics do not necessarily produce uniform participation outcomes because institutional arrangements, access to information, community leadership, and opportunities for involvement may also influence participation (Eyisi et al., 2021; Han et al., 2023; Reindrawati, 2023; Sharma & Bhat, 2023).

Yankari Game Reserve, located in Bauchi State, Nigeria, is an important wildlife and ecotourism destination known for its natural attractions and biodiversity (Yakubu et al., 2024). Tourism activities in the reserve depend on supporting infrastructure and services that require effective management to sustain visitor experiences and conservation objectives. Communities surrounding the reserve represent important stakeholders whose socioeconomic circumstances and involvement may affect how tourism facilities are managed (Yakubu et al., 2024). Examining the relationship between their socioeconomic characteristics and participation can provide insights into the social dimensions of tourism facility management.

Despite the importance of community participation in sustainable tourism, understanding how socioeconomic characteristics relate to different levels of involvement remains essential for developing context-specific management strategies (Bello, 2021; Eyisi et al., 2021; Reindrawati,

2023). This study therefore examines the socioeconomic characteristics of host communities and their level of participation in the management of tourism facilities in Yankari Game Reserve, Nigeria. The findings are expected to inform policies and management approaches that promote inclusive participation, strengthen community and institutional collaboration, and improve the sustainable management of tourism facilities (Han et al., 2023; Rahman et al., 2022; Sharma & Bhat, 2023).

2. Literature Review

2.1 Socioeconomic Characteristics

Socioeconomic characteristics refer to the social and economic attributes of individuals that shape their opportunities, resources, experiences, and participation in community activities (Isiaka & Isiaka, 2019; Ejikeme, 2025). These characteristics commonly include age, gender, educational attainment, occupation, income level, household size, and length of residence (Balogun & Ajagunna, 2023; Ejikeme, 2025). In tourism research, socioeconomic characteristics are important because they help explain differences in how individuals access information, perceive tourism development, benefit from tourism activities, and engage with institutions responsible for managing tourism resources and facilities (Eyisi et al., 2021; Reindrawati, 2023; Wondirad & Ewnetu, 2019). For instance, educational attainment may influence residents' understanding of tourism policies and their ability to contribute to management decisions, while occupation and income may determine the time and financial resources available for participation (Balogun & Ajagunna, 2023; Wondirad & Ewnetu, 2019).

The relationship between socioeconomic characteristics and participation is not necessarily uniform. Individuals with higher incomes or educational qualifications may have greater access to decision-making platforms, but people with lower incomes may possess valuable local knowledge and practical experience (Reindrawati, 2023; Wondirad & Ewnetu, 2019). Similarly, long-term residents may have a stronger understanding of community needs and tourism-related challenges than recent residents, although the extent of this advantage depends on the local context (Ejikeme, 2025; Wang et al., 2021). Gender, age, and household responsibilities may also influence opportunities to attend meetings, participate in maintenance activities, or engage with tourism management authorities (Balogun & Ajagunna, 2023; Eyisi et al., 2021; Huo et al., 2024).

In the context of Yankari Game Reserve, socioeconomic characteristics provide an important basis for examining variations in host community participation in tourism facility management. Communities surrounding the reserve may differ in their demographic composition, educational opportunities, occupations, and economic circumstances. These differences may be associated with varying levels of involvement in consultation, decision-making, monitoring, and maintenance of tourism facilities. Examining these characteristics will help establish whether participation is concentrated among particular socioeconomic groups or distributed more broadly across host communities.

2.2 Host Community Participation

Host community participation refers to the involvement of residents living within or around a tourism destination in activities and decisions affecting tourism development and management (Iqbal et al., 2022). It recognises local residents as important stakeholders whose knowledge, interests, and experiences should inform the planning, operation, maintenance, and monitoring of tourism facilities (Roxas et al., 2020). Participation can take several forms, ranging from receiving information and attending consultation meetings to contributing labour, participating in

management committees, monitoring facility conditions, and exercising influence over decisions concerning tourism infrastructure and services (Bichler, 2021).

The extent of participation can vary considerably (Iqbal et al., 2022). In some situations, residents may be informed about decisions that have already been made, while in others, they may be consulted without having substantial influence over the final outcomes (Bichler, 2021). More substantive participation occurs when community representatives contribute to decision-making, share management responsibilities, and have opportunities to influence the allocation of resources and the maintenance of facilities (Roxas et al., 2020). These distinctions are important because attendance at meetings or involvement in occasional activities does not necessarily indicate meaningful participation in tourism management (Iqbal et al., 2022).

Effective host community participation can improve communication between tourism authorities and residents, strengthen local ownership, encourage accountability, and help identify maintenance problems before they become more serious (Lestari et al., 2025). It may also promote cooperation between communities and government agencies while supporting the long-term sustainability of tourism facilities (Roxas et al., 2020). However, participation can be constrained by inadequate funding, limited access to information, weak institutional arrangements, insufficient training, and unequal representation of community members (Adebayo & Butcher, 2021).

2.3 Arnstein's Ladder of Citizen Participation (1969)

Arnstein's Ladder of Citizen Participation was developed by Sherry R. Arnstein in 1969 to explain differences in the degree of citizen power within decision-making processes (Arnstein, 1969; Gaber, 2019). The framework challenges the assumption that all forms of public participation provide meaningful influence, arguing that participation should be assessed according to the extent to which citizens can affect decisions and outcomes (Arnstein, 1969; Ianniello et al., 2019). It identifies eight levels of participation, organised into three broad categories: non-participation, tokenism, and citizen power (Arnstein, 1969; Rahimi et al., 2023).

The first category, non-participation, comprises manipulation and therapy, in which participation may be used to educate, persuade, or manage citizens rather than give them genuine influence (Figure 1). The second category, tokenism, includes informing, consultation, and placation (Arnstein, 1969). At these levels, citizens may receive information, express opinions, or advise decision-makers, but they may have limited power to ensure that their views influence final decisions (Arnstein, 1969; Ianniello et al., 2019). The third category, citizen power, comprises partnership, delegated power, and citizen control (Arnstein, 1969). These levels represent progressively greater opportunities for citizens to negotiate, share authority, or exercise control over decisions affecting them (Arnstein, 1969; Gaber, 2019).

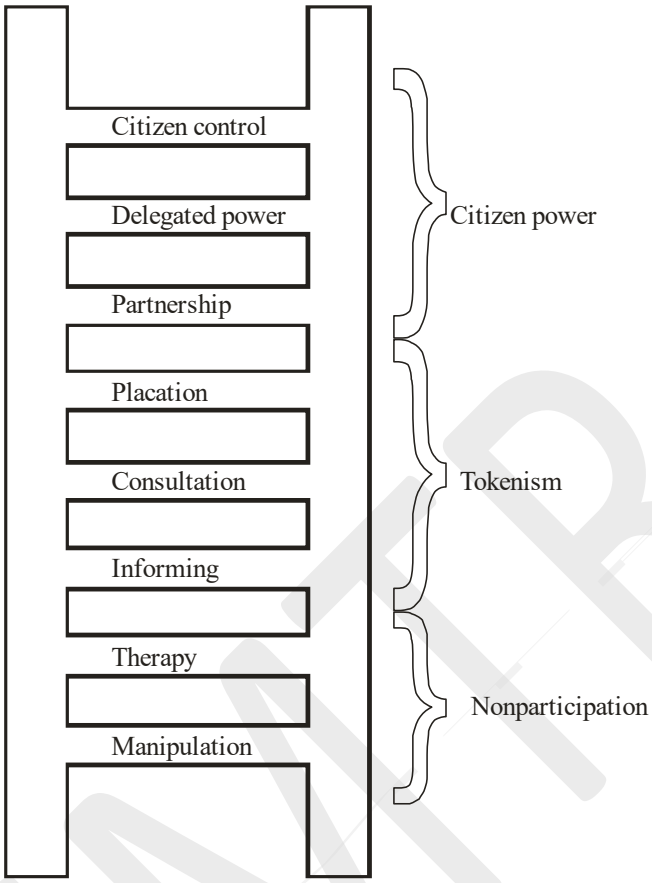


Figure 1: A Ladder of Citizen Psarticipation

Source: Arnstein (1969)

One important assumption of the framework is that participation should be evaluated in relation to the distribution of power between citizens and authorities (Arnstein, 1969). It also assumes that the degree of citizen influence can be meaningfully differentiated across levels (Arnstein, 1969; Rahimi et al., 2023). However, the ladder has limitations (Ianniello et al., 2019; Rahimi et al., 2023). Its hierarchical structure may oversimplify participation, which can vary across issues and institutions (Ianniello et al., 2019; Rahimi et al., 2023). It may also understate the value of consultation where communities have limited formal authority but can still influence outcomes (Ianniello et al., 2019; Silverman et al., 2020). Furthermore, its original emphasis on citizen power may not fully capture cultural, institutional, and resource-related differences in community participation across developing-country contexts (Ianniello et al., 2019; Kantsperger et al., 2019; Jánová et al., 2025). Despite these limitations, the framework is relevant to the study of Yankari Game Reserve because it provides a basis for distinguishing consultation from substantive participation in tourism facility management. It can help determine whether residents merely receive information, provide opinions, share management responsibilities, or exercise decision-making authority. When combined with socioeconomic characteristics, the framework can also guide an examination of whether opportunities for meaningful participation differ across social and economic groups.

2.4 Relationship Between the Socioeconomic Characteristics of Host Communities and Their Participation in Tourism Facility Management

The relationship between the socioeconomic characteristics of host communities and their participation in tourism facility management is an important subject in sustainable tourism development (Khalid et al., 2019). Socioeconomic characteristics refer to the social and economic attributes of individuals, including age, gender, educational attainment, occupation, income level, household size, and length of residence (Dang et al., 2026). These characteristics may influence residents' access to information, availability of resources, perceptions of tourism development, and opportunities to participate in the planning, operation, maintenance, and monitoring of tourism facilities (Iqbal & Ahmed, 2022). Understanding this relationship is essential for developing inclusive management approaches that recognise the interests and contributions of host communities (Shafieisabet & Haratifard, 2020).

Educational attainment may influence participation by determining residents' awareness of tourism policies, understanding of management procedures, and ability to communicate with tourism authorities (Joo et al., 2020). Individuals with higher educational qualifications may be more confident in attending meetings, contributing to discussions, and participating in management committees (Dang et al., 2026). However, residents with limited formal education may possess valuable indigenous knowledge and practical experience that can support facility maintenance and the identification of local tourism needs (Lo & Janta, 2020). Therefore, educational qualifications should not be regarded as the sole determinant of meaningful participation (Shafieisabet & Haratifard, 2020).

Income and occupation may also influence community involvement (Iqbal & Ahmed, 2022). Individuals with relatively stable incomes and flexible working arrangements may have more opportunities to attend consultation meetings or contribute to community management activities (Dang et al., 2026). Conversely, residents engaged in demanding occupations or struggling with economic insecurity may have limited time and resources for participation (Mazengiya, 2022). Nevertheless, tourism-related employment and business opportunities may encourage residents to become more involved in facility management because they have a direct interest in maintaining the attractiveness and functionality of the destination (Khalid et al., 2019).

Age, gender, and length of residence may further shape participation patterns (Dang et al., 2026). Older residents and long-term community members may possess extensive knowledge of local environmental conditions, community relationships, and tourism-related changes (Kantsperger et al., 2019). Younger residents may contribute new ideas, technical skills, and innovative approaches to facility management (Lo & Janta, 2020). Gender can influence participation where cultural expectations, household responsibilities, or unequal access to decision-making platforms restrict the involvement of particular groups (Guo et al., 2023). Inclusive management arrangements are therefore necessary to ensure that different socioeconomic groups have meaningful opportunities to contribute (Dallesandry Malalantang & Timah, 2026).

3. Research Locale and Methodology

3.1 Study Area

Yankari Game Reserve, located in Bauchi State, Nigeria, has a rich historical background dating back to the 1950s when it was first established as a game reserve by the Northern Nigerian Government (Odunlami & Lake, 2003). Initially designated in 1956 and formally opened to the public in 1962, it was created to preserve wildlife and promote tourism in the region (Dele et al., 2018). Yankari gained prominence as Nigeria's premier wildlife sanctuary, attracting both local

and international visitors due to its diverse fauna, natural warm springs, and scenic landscape (RADAM & Hashim, 2014). Over the years, it evolved from a game reserve into a national park in 1991 but was later reverted to a game reserve under the management of the Bauchi State Government in 2006 (Ogunjinmi et al., 2008). Its historical significance lies not only in its conservation efforts but also in its role as a symbol of Nigeria's commitment to environmental protection and ecotourism, making it one of the most important protected areas in West Africa (Odunlami & Lake, 2003).

Yankari Game Reserve is located in the south-central part of Bauchi State, northeastern Nigeria (Figures 2 - 3). It lies within Alkaleri Local Government Area and is positioned geographically between latitude 9°45'N to 10°15'N and longitude 10°30'E to 11°00'E (Figure 4). The reserve is approximately 110 kilometres southeast of Bauchi metropolis and about 58 kilometres from Alkaleri town, the administrative headquarters of the LGA (Olokesusi, 1990). Covering a vast land area of 2,244 square kilometres, Yankari is the largest game reserve in Nigeria (Fada, 2015) and plays a key role in biodiversity conservation and eco-tourism development in the region (Afolayan & Ajayi, 1980).

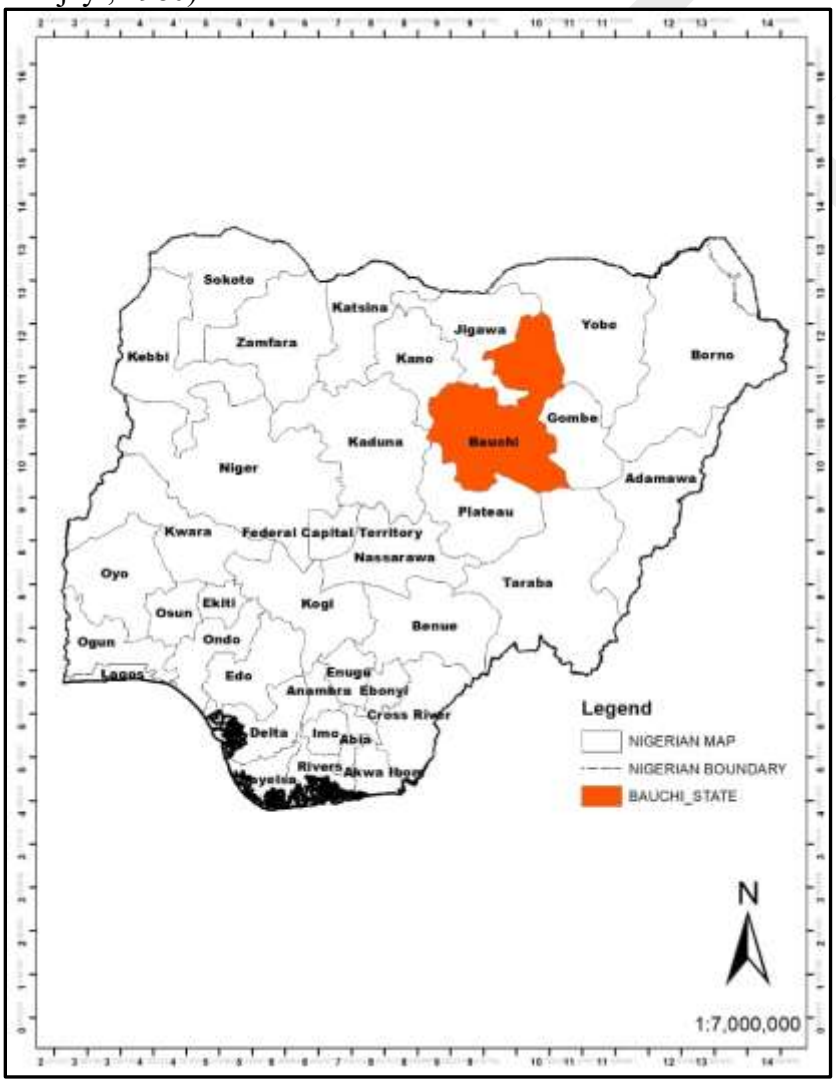


Figure 2: Bauchi State in Nigeria

Source: Bauchi State Ministry of Lands and Housing (2026)

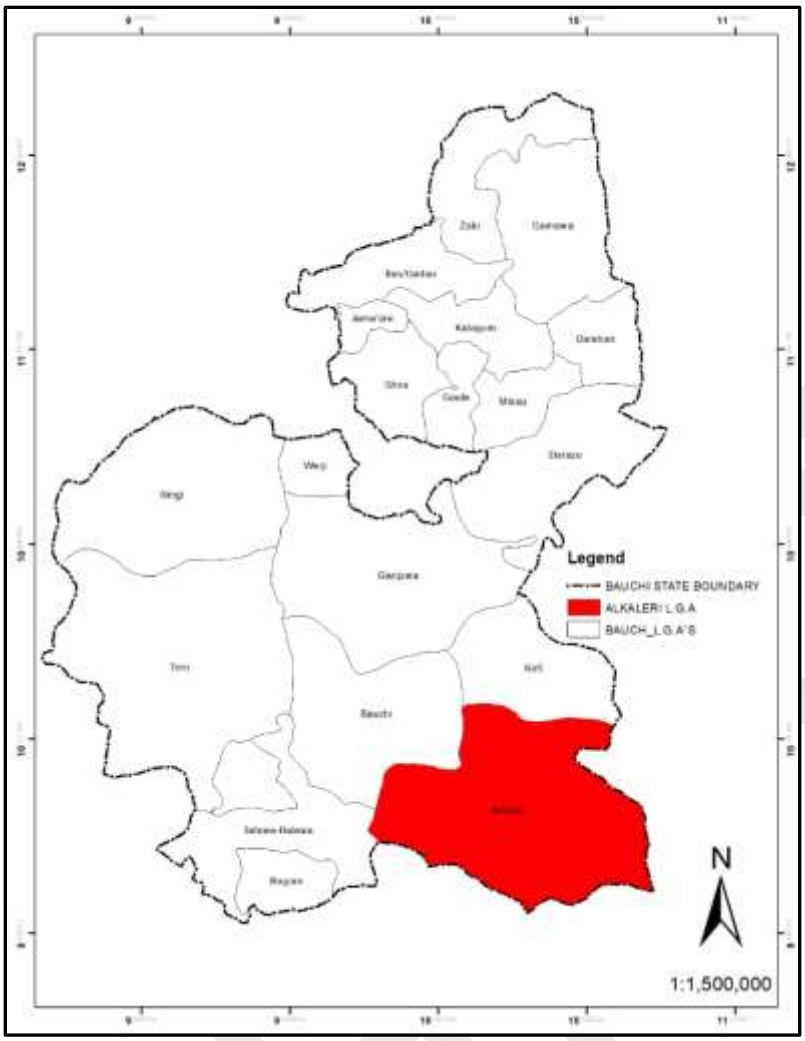


Figure 3: Alkaleri Local Government Area in Bauchi State
Source: Bauchi State Ministry of Lands and Housing (2026)

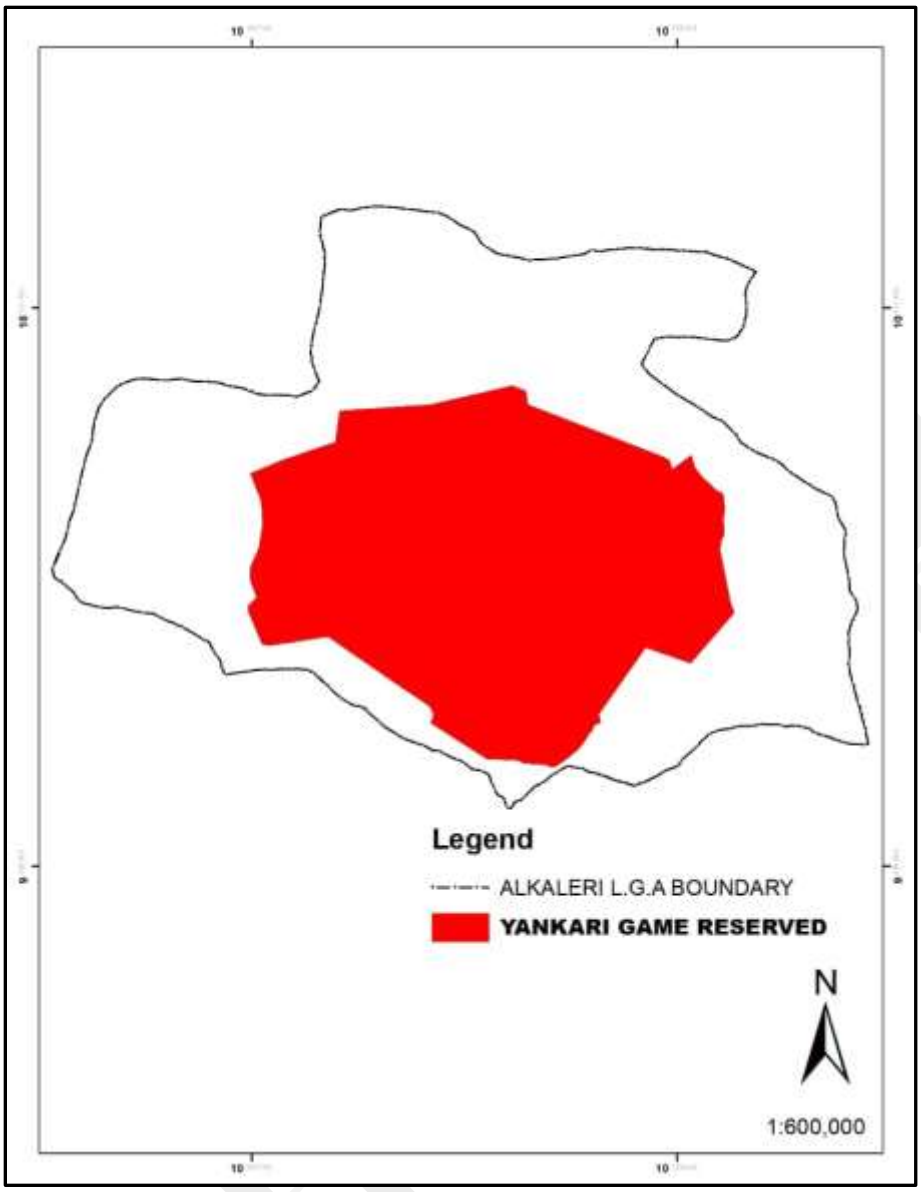


Figure 4: Yankari Game Reserve in Alkaleri Local Government Area
Source: Bauchi State Tourism Development Board (2026)

The physical landscape of Yankari is characterized by gently undulating plains interspersed with granite rock outcrops and inselbergs, rising between 200 and 600 metres above sea level (Buba, 2024). It is traversed by several perennial rivers, with the Gaji River being the most prominent, serving as a major water source for wildlife (Umar et al., 2024). The reserve also features a number of warm springs, notably the Wikki Warm Spring, which maintains a constant temperature of about 31°C throughout the year (Bello et al., 2025). These water bodies not only support the survival of wildlife but also enhance the reserve's appeal as a tourist destination (Abubakar et al., 2023). Yankari experiences a tropical savanna climate with distinct wet (May to October) and dry (November to April) seasons, receiving between 900 mm and 1,050 mm of annual rainfall (Afolayan & Ajayi, 1980). Vegetation in the reserve is dominated by Sudan-Sahel savanna woodland, consisting of grasslands and scattered trees such as baobab, tamarind, and acacia (Buba et al., 2024). This diverse environment supports a wide range of fauna, including Nigeria's largest

population of African elephants, as well as lions, baboons, waterbucks, hippos, and over 350 species of birds (Magama et al., 2018). Yankari's unique combination of geographic, ecological, and climatic features makes it a critical site for wildlife conservation, environmental research, and sustainable tourism in Nigeria (Ortyom & Wahab, 2023).

The host communities of Yankari Game Reserve, primarily located within Alkaleri Local Government Area of Bauchi State, are predominantly rural and agrarian. The majority of residents engage in subsistence farming, animal husbandry, and petty trading as their main sources of livelihood. Infrastructure such as roads, potable water, and electricity remains underdeveloped in most of the settlements surrounding the reserve. Despite these challenges, the presence of Yankari Game Reserve offers socioeconomic opportunities for the host communities. Local residents benefit from employment in tourism-related services such as guiding, security, transportation, and hospitality. Some also generate income by selling crafts and local products to visitors. However, the full economic potential remains untapped due to limited skills training, poor infrastructure, and weak community participation in tourism planning and management.

3.2 Methodology

The study adopted a quantitative approach and a non-experimental survey research design to examine the relationship between the socioeconomic characteristics of host communities and their participation in tourism facility management at Yankari Game Reserve, Bauchi State, Nigeria. The survey design facilitated the collection of standardised data from household heads across seven host communities. Primary and secondary sources of data was used for this study. The primary source of data consists of field surveys and field observations, while the secondary sources of data consists of journal articles, textbooks, conference papers and other literary materials that are relevant to the study. The study population comprised household heads in seven communities located within a 1 km buffer of the geographical boundary of Yankari Game Reserve. The communities were Yalo, Pali, Jada, Mai'ari, Digare, Mansur, and Guruza (Figure 5). Residential dwellings in these communities were digitised and counted using QGIS version 3.44.0, producing a sampling frame of 13,477 residential dwellings. Assuming one household head per residential dwelling, the estimated population was 13,477 household heads. The sample size of 374 household heads was determined using the Krejcie and Morgan sample size determination table (Table 1). A total of 374 questionnaires were administered to the household heads, out of which 368(98.4%) were retrieved and 6(1.6%) were not returned. Following the data cleaning and screening process, 2(0.5%) questionnaires were deemed invalid due to missing values and subsequently removed. This yielded a final sample of 366 valid questionnaires (97.9%), which were utilized for the final analysis. The sample was proportionately allocated among the seven communities according to their respective population sizes. Simple random sampling was subsequently employed to select respondents from the communities, ensuring that the sample reflected the relative population sizes of the host communities.



Figure 5: Host Communities of Yankari Game Reserve
Source: Researchers' (2026)

Table 1: Sampling Frame and Sample Size for the Study

Name of Host Community	Number of Residential Dwellings	Number of Household Heads (one HHH per dwelling)	Sample size
Yalo	1,181	1,181	33
Pali	1,251	1,251	35
Jada	950	950	26
Mai'ari	1,115	1,115	31
Digare	3,525	3,525	98
Mansur	3,219	3,219	89
Guruza	2,236	2,236	62
	13,477	**13,477**	**374**

Source: Researchers' Fieldwork (2026)

Primary data were collected using a structured questionnaire administered to the selected household heads. The questionnaire obtained information on respondents' socioeconomic characteristics, as well as their participation in tourism facility management. The participation-related questions focused on respondents' involvement in management activities and decision-making concerning tourism facilities. Secondary data were obtained from relevant journal articles, textbooks, conference papers, and other scholarly publications. GPS and QGIS were also used to support the spatial identification of the study area and the seven host communities.

Five trained field assistants supported the administration of the questionnaires. Hausa, English, and Nigerian Pidgin were used where necessary to facilitate communication and ensure that

respondents understood the questions. The data were analysed using descriptive and inferential statistics with SPSS version 31. Frequencies and percentages were used to summarise respondents' socioeconomic characteristics and levels of participation in tourism facility management. The Chi-square test of independence was employed to examine the association between socioeconomic characteristics and participation levels. Statistical significance was assessed at the 5% significance level ($p < 0.05$). The socioeconomic variables included in the analysis corresponded to those measured in the questionnaire, while the suitability of the Chi-square test depended on the categorical nature of the variables analysed. Furthermore, the figure of 13,477 represented residential dwellings and was used as a proxy for the number of household heads based on the assumption of one household head per dwelling.

4. Results and Discussions

4.1 Socioeconomic Characteristics of Household Heads in Host Communities

The results in Table 2 presents the socioeconomic profile of the 366 host community respondents surveyed across ten parameters: sex, occupation, monthly income, marital status, age, educational attainment, ethnicity, religion, duration of stay, and household size.

Regarding gender composition, a majority of the respondents were male 247(67.5%), while female respondents accounted for 119(32.5%). This suggests that males may be more actively involved in activities related to tourism infrastructure management. However, the relatively lower representation of females may indicate possible gender disparities in participation or involvement in tourism infrastructure-related decision-making. Therefore, the findings imply the need for more inclusive and gender-sensitive approaches that encourage greater participation of women in tourism infrastructure management and planning. Adebayo and Butcher (2021) also reiterated the effect of gender inclusivity on tourism infrastructure development and management.

Occupational distributions reveal that trading was the most predominant primary economic activity 111(30.3%), followed by farming 86(23.5%) and civil service 84(23.0%). Self-employed individuals comprised 54(14.8%), while 31(8.5%) were unemployed. This suggests that the host communities are predominantly engaged in diverse livelihood and occupational activities that may influence the nature and extent of their participation in tourism infrastructure management. The finding therefore implies that tourism infrastructure management strategies should incorporate livelihood-based opportunities that encourage greater host community participation, such as employment and other community-based tourism enterprises. Dang et al. (2026) also agrees that the nature of household occupation has a significant relationship with their role in tourism infrastructure management.

In terms of monthly income (in Naira), the largest proportion of respondents earned between 60,000 and 89,999 151(41.3%), followed by those earning 30,000–59,999 96(26.2%) and 90,000–119,999 94(25.7%). Only 25(6.8%) reported earning 120,000 and above. This indicates that most members of the host communities have moderate income levels and may not possess enough financial capacity to make substantial personal contributions toward the management of tourism infrastructure in Yankari Game Reserve. The finding therefore implies that host community role in tourism infrastructure management may be expressed more on in areas that has to do with non-financial contributions such as provision of voluntary labour during maintenance and local knowledge rather than direct financial participation.

Analysis of marital status indicates that over three-fifths of the respondents were married 222(60.7%), 87(23.8%) were single, 30(8.2%) were divorced, and 27(7.4%) were widowed. The predominance of married respondents suggests that a substantial proportion of community

members may have household and family responsibilities, which could influence their interest in and commitment to tourism infrastructure management. The finding therefore implies that their participatory roles in tourism infrastructure management may be enhanced when host communities perceive clear socio-economic benefits for their households and families**.** Kim et al. (2021), is of the opinion that residents' participatory roles and perceived positive impact of tourism significantly influence their attitudes and support for tourism infrastructure management.

The age distribution highlights a working-age population, with the highest concentration falling within the 31–45 age cohort 167(45.6%), followed by those aged 18–30 114(31.1%). Respondents aged 46–59 constituted 75(20.5%), while those aged 60 and above accounted for 10(2.7%). This indicates that the host communities possess a predominantly working-age population with the potential to contribute actively to tourism infrastructure management in Yankari Game Reserve.

With respect to educational attainment, secondary education was the highest qualification attained by the largest group 144(39.3%). Equal proportions of respondents possessed tertiary qualifications 57(15.6%) and non-formal education 57(15.6%), while 56(15.3%) had basic education and 52(14.2%) had no formal schooling. The predominance of respondents with at least secondary education suggests that a considerable proportion of the host community possesses a basic level of literacy and knowledge that could facilitate their involvement in tourism infrastructure management. particularly in areas such as environmental awareness of Game Reserve resources. The finding therefore implies that training and awareness programmes should be designed and conducted to accommodate the different educational backgrounds of host community members. Chale et al. (2026) also claimed that education and capacity-building can enhance community's role in tourism infrastructure management.

Ethnically, the dominant group was Hausa/Fulani 266(72.7%), with minority representations from Igbo 30(8.2%), Yoruba 16(4.4%), and other ethnic groups 54(14.8%). Religiously, 318(86.9%) identified as Muslims, 38(10.4%) as Christians, and 10(2.7%) as traditional worshippers. This composition suggests that the host communities are relatively homogeneous in terms of their dominant ethnic and religious characteristics, which may facilitate communication and mobilization for participation in tourism infrastructure management. However, the presence of minority ethnic and religious groups, however, indicates the need for an inclusive and culturally sensitive approach to community participation to ensure that all groups play an active and positive role in the management of tourism infrastructure in Yankari Game Reserve. Eyisi et al. (2021) agrees that culture and religion influences host community involvement in tourism infrastructure management.

In the case of duration of stay, majority had resided in the area for 6–10 years 102(27.9%), 1–5 years 95(26.0%), 11–15 years 85(23.2%), and 16 years and above 84(23.0%). The findings indicate that a substantial proportion of respondents have lived in the host communities long enough to develop familiarity with the local environment, tourism activities, and challenges affecting tourism infrastructure management. The finding therefore implies that long-term residents can serve as valuable human resources for the integration of indigenous knowledge into tourism infrastructure planning and management.

Household size was primarily concentrated between 0–4 members 118(32.2%), 10–14 members 96(26.2%), and 5–9 members 94(25.7%), while larger households of 20 and above comprised 36(9.8%) and 15–19 members comprised 22(6.0%). The distribution suggests that the host communities comprise households of varying sizes, with a substantial proportion having five or more members**.** The finding therefore implies that household characteristics should be considered when designing community participation strategies for tourism infrastructure management**.**

Table 2: Socioeconomic Characteristics of Host Communities

Characteristics	Classification	Household Head	Percent
Sex	Male	247	67.5
	Female	119	32.5
		366	100
Occupation	Farming	86	23.5
	Civil Servant	84	23.0
	Trading	111	30.3
	Unemployed	31	8.5
	Self-employed	54	14.8
		366	100
Income (Naira)	30,000 – 59,999	96	26.2
	60,000 – 89,999	151	41.3
	90,000 – 119,999	94	25.7
	120,000 and above	25	6.8
		366	100
Marital Status	Single	87	23.8
	Married	222	60.7
	Divorced	30	8.2
	Deceased partner	27	7.4
		366	100
Age Group	18 – 30	114	31.1
	31 – 45	167	45.6
	46 – 59	75	20.5
	60 and above	10	2.7
		366	100
Level of Education	Non-formal education	57	15.6
	No education	52	14.2
	Basic	56	15.3
	Secondary	144	39.3
	Tertiary	57	15.6
		366	100
Duration of stay (In years)	1 – 5	95	26.0
	6 – 10	102	27.9
	11 – 15	85	23.2
	16 and above	84	23.0
		366	100
Household Size	0 – 4	118	32.2
	5 – 9	94	25.7
	10 – 14	96	26.2
	15 – 19	22	6.0
	20 and above	36	9.8
		366	100

Source: Researchers' (2026)

4.2 Assessment of Host Communities' Participation in Tourism Infrastructure

Assessment of local awareness indicates that a large majority of respondents were aware of existing tourism infrastructure in Yankari Game Reserve 291(79.5%), whereas 75(20.5%) reported a lack of awareness. The finding implies that awareness of tourism infrastructure in Yankari Game Reserve is relatively high among the host communities. This finding is consistent with Madaki et al. (2024), who reported that majority of communities surrounding Yankari Game Reserve had experienced and recognised various infrastructure and development benefits associated with the reserve, including access roads and culverts, clinics and health centres, schools, and water facilities. Table 3 presents the opinions of host community respondents regarding their role in tourism infrastructure management across five key dimensions: level of involvement, types of infrastructure managed, decision-making power, operational challenges, and interest in capacity building. Regarding the level of community involvement in tourism infrastructure management, the largest proportion of respondents reported being moderately involved 164(44.8%), followed by those who were minimally involved 66(18.0%) and not involved 62(16.9%). Meanwhile, 50(13.7%) indicated they were highly involved, and only 24(6.6%) reported being fully involved. The findings indicate that community involvement in tourism infrastructure management is generally moderate but limited at the level of those that are fully involved**.** Similarly, Okazaki (2008) emphasized that role of host communities can be encouraged, if they are encouraged to participate in planning and decision-making for tourism infrastructure management.

Concerning the specific types of infrastructure, the community helps manage, recreational facilities recorded the highest involvement 130(35.5%), followed by roads and trails 72(19.7%), waste management systems 64(17.5%), and accommodation facilities 54(14.8%). Public amenities such as restrooms and signages recorded the lowest level of community management support 46(12.6%). The findings indicate that community involvement in tourism infrastructure management is strongest in recreational facilities. The result of their role in managing tourism infrastructure in Yankari Game Reserve suggests host communities concentrated on infrastructure that is more visible and directly associated with tourism or recreational activities, while less prominent support facilities receive comparatively limited community involvement.

Evaluating community decision-making power over infrastructure projects reveals that a combined majority experienced limited authority. Specifically, 130(35.5%) noted that the community is consulted but lacks a final say, while 84(23.0%) reported having no decision-making power at all. Conversely, 126(34.4%) indicated shared decision-making power with relevant authorities, and only 26(7.1%) possessed full decision-making authority. This indicates that although communities may be involved in consultation processes, their participation does not necessarily translate into meaningful influence over tourism infrastructure decisions.

The primary challenges hindering effective community management were led by a lack of funds 110(30.1%) and insufficient community participation 109(29.8%). Other notable obstacles included limited technical expertise 67(18.3%), environmental concerns 33(9.0%), poor coordination with tourism authorities 32(8.7%), and conflicts with tourism operators 15(4.1%). The findings imply that effective community management of tourism infrastructure in the study area is constrained primarily by inadequate financial resources and low community participation**.**

Finally, when asked about interest in future training or capacity-building programs related to tourism infrastructure management, an overwhelming majority of respondents expressed interest 265(72.4%), while 60(16.4%) were unsure, and 41(11.2%) indicated no interest. The finding implies that there is a strong willingness among community members to participate in future training and capacity-building programmes on tourism infrastructure management. Tourism

authorities such as the Bauchi State Tourism Board and other relevant stakeholders should therefore develop practical, community-oriented training programmes that address identified technical and managerial deficiencies.

Table 3: Respondents opinion on their Participation in Tourism Infrastructure

Variables	Household Heads	Percent
Awareness of existing tourism infrastructure in the Reserve		
Aware	291	79.5
Not aware	75	20.5
	366	100
Level of Involvement in the management of Tourism Infrastructure		
Not involved	62	16.9
Minimally involved	66	18.0
Moderately involved	164	44.8
Highly involved	50	13.7
Fully involved	24	6.6
	366	100
Type of Tourism Infrastructure in which Involvement is Expressed		
Accommodation facilities	54	14.8
Recreational facilities	130	35.5
Waste management system	64	17.5
Roads and trails	72	19.7
Public amenities (restrooms and signages)	46	12.6
	366	100
Existence of Decision-making power regarding tourism infrastructure projects		
No decision making power	84	23.0
consulted but no final say	130	35.5
shared decision making with authorities	126	34.4
full decision making authority	26	7.1
	366	100
Challenges Encountered in Playing your Role in Tourism Infrastructure Management		
lack of funds	110	30.1
insufficient community participation	109	29.8
environmental concern	33	9.0
conflict with tourism operators	15	4.1
poor coordination with authorities	32	8.7
limited technical expertise	67	18.3
	366	100
Community Interest in Tourism Infrastructure Management Training and Capacity Building		
Interested	265	72.4

Not Interested	41	11.2
Not sure of interest	60	16.4
	366	100

Source: Researchers' (2026)

The results in Table 4 presents the Chi-Square test of independence, which assesses the association between the socioeconomic characteristics of host communities and their level of involvement in tourism infrastructure management. χ^2 is the symbol of Chi-square. The results reveal statistically significant associations ($p < 0.05$) across nine of the ten evaluated characteristics: level of education ($\chi^2 = 41.504$, $p < 0.001$, ethnicity ($\chi^2 = 31.807$, $p < 0.001$), age group ($\chi^2 = 16.824$, $p < 0.001$), occupation ($\chi^2 = 16.428$, $p = 0.002$), marital status ($\chi^2 = 12.788$, $p = 0.005$), monthly income ($\chi^2 = 11.714$, $p = 0.008$), duration of stay ($\chi^2 = 11.030$, $p = 0.012$), sex ($\chi^2 = 9.133$, $p = 0.003$), and religion ($\chi^2 = 6.117$, $p = 0.047$). Higher rates of involvement were predominantly observed among males 195(53.3%), traders 90(24.6%), middle-income earners 121(33.1%), individuals aged 31–45 125(34.2%), and those with secondary education 128(35.0%). In contrast, household size demonstrated no statistically significant association with participation ($\chi^2 = 0.942$, $p = 0.918$).

Regarding hypothesis testing, the null hypothesis states that there is no significant relationship between the socioeconomic characteristics of host communities and their level of participation in tourism infrastructure management, while the alternative hypothesis posits a significant relationship. Because the calculated p-values for the vast majority of socioeconomic indicators most notably education, income, age, occupation, and sex are strictly below the standard alpha threshold of 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted.

The findings confirm that the socioeconomic characteristics of host community members significantly influence their engagement in managing tourism infrastructure at Yankari Game Reserve. Factors such as educational attainment, income, occupational status, and duration of stay serve as critical determinants of local participation, highlighting the necessity of tailoring community-based tourism management strategies to these distinct socioeconomic profiles (Burgos & Mertens, 2017; Akpan & Bassey, 2022).

Table 4: Association between Socioeconomic Characteristics of Host Communities and their Level of Involvement in Tourism Infrastructure Management

Socio-economic Characteristics	Classification	Involvement		χ^2 (p-value)
		Not Involved	Involved	
Sex	Male	52 (14.2%)	195 (53.3%)	9.133 (0.003)
	Female	10 (2.7%)	109 (29.8%)	
Occupation	Farming	20 (5.5%)	66 (18.0%)	
	Civil Servant	5 (1.4%)	79 (21.6%)	16.428 (0.002)
	Trading	21 (5.7%)	90 (24.6%)	
	Unemployed	10 (2.7%)	21 (5.7%)	
	Self-employed	6 (1.6%)	48 (13.1%)	
Income	30,000 – 59,999	10 (2.7%)	86 (23.5%)	
	60,000 – 89,999	30 (8.2%)	121(33.1%)	11.714

	90,000 – 119,999	22 (6.0%)	72 (19.7%)	(0.008)
	120,000 and above	0 (0.0)	25 (6.8%)	
Marital Status	Single	10 (2.7%)	77 (21.0%)	
	Married	36 (9.8%)	186 (50.8%)	12.788
	Divorced	5 (1.4%)	25 (6.8%)	(0.005)
	Deceased partner	11 (3.0%)	16 (4.4%)	
Age Group	18 – 30	15 (4.1%)	99 (27.0%)	
	31 – 45	42 (11.5%)	125 (34.2%)	16.824
	46 – 59	5 (1.4%)	70 (19.1%)	(< 0.001)
	60 and above	0 (0.0%)	10 (2.7%)	
Level of Education	Non-formal education	5 (1.4%)	52 (14.2%)	41.504
	No education	5 (1.4%)	47 (12.8%)	(<0.001)
	Basic	10 (2.7%)	46 (12.6%)	
	Secondary	16 (4.4%)	128 (35.0%)	
	Tertiary	26 (7.1%)	31 (8.5%)	
Ethnicity	Hausa/Fulani	40 (10.9%)	226 (61.7%	
	Igbo	0 (0.0%)	30 (8.2%)	31.807
	Yoruba	0 (0.0%)	16 (4.4%)	(<0.001)
	Others	22 (6.0%)	32 (8.7%)	
Religion	Islam	51(13.9%)	267 (73.0%)	6.117
	Christianity	11 (3.0%)	27 (7.4%)	(0.047)
	Traditional Worshiper	0 (0.0%)	10 (2.7%)	
Duration of stay	1 – 5	10 (2.7%)	85 (23.2%)	
	6 – 10	27 (7.4%)	75 (20.5%)	11.030
	11 – 15	10 (2.7%)	75 (20.5%)	(0.012)
	16 and above	15 (4.1%)	69(18.9%)	
Household Size	0 – 4	21 (5.7%)	97 (26.5%)	
	5 – 9	16 (4.4%)	78 (21.3%)	0.942
	10 – 14	15 94.1%)	81 (22.1%)	(0.918)
	15 – 19	5 (1.4%)	17 (4.6%)	
	20 and above	5 (1.5%)	31 (8.5%)	

Source: Researchers' (2026)

Conclusion and Recommendations

The study concludes that host community participation in tourism infrastructure management at Yankari Game Reserve is generally moderate, with limited participation in full decision-making. The Chi-square results revealed significant associations between participation and nine socioeconomic characteristics, while household size showed no significant association. Inadequate funding, insufficient community participation, and limited technical expertise were the major constraints. These findings highlight the need to strengthen community involvement for sustainable tourism infrastructure management. Accordingly, the Bauchi State Tourism Development Board should establish inclusive community-based management committees that give residents meaningful influence over planning and decision-making. Regular training should improve host community members' technical and managerial skills, while government funding and public-private partnerships should support infrastructure maintenance. Furthermore,

awareness programmes and equitable access to tourism-related employment and business opportunities should be promoted to encourage broader participation. Periodic monitoring should assess host community participation and ensure that residents' contributions inform management decisions.

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